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## Design Study of button BPMs for the EIC Hadron Storage Ring

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The Electron-Ion Collider (EIC) facility at Brookhaven National Laboratory is in the preliminary design phase and advancing towards establishing the project baseline. One challenging task is to design cryogenic BPM pick-ups for the Hadron Storage Ring (HSR) that will ensure reliable beam position measurements over a large dynamic range. The BPM pick-up design must take into consideration potential elevated heating concerns caused by resistive wall effects for a radially shifted beam during normal operations, in the buttons and cryogenic signal cables. The geometric impedance associated with the button configuration and housing transition to the adjacent HSR beam screen must also be minimized. This paper focuses on the evolution of the button BPM design and describes simulation results of the impedance characteristics, position-related voltage signals, and beam-induced losses on the metallic BPM buttons due to the radial offsets.

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### Footnotes

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